CLAIMS

1. A method for generating a phase-modulated wave front of electromagnetic radiation comprising the steps of:

providing an input wave front of electromagnetic radiation, $E(x,y)$,

performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front to generate a spatial amplitude distribution $a(x,y)$ in the electromagnetic radiation in a plane transverse to a direction of propagation of the electromagnetic radiation,

Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution of the amplitude-modulated wave front $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

filtering the Fourier or Fresnel distribution by phase shifting one or more first components in relation to one or more second components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ and/or damping one or more third components in relation to one or more fourth components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ by a spatial filter having a filter function $H(f_x,f_y)$ giving the phase shift and/or damping for each component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation whereby a phase-modulated wave front $o(x',y')$ is formed, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

2. A method according to claim 1, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, in order to generate a predetermined phase-modulation.

3. A method according to claim 2, further comprising the step of providing means for performing the spatial amplitude modulation $\alpha(x,y)$ and/or the spatial filter which are addressable and adapted to receive one or more control signals controlling the spatial amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the method further

comprising the step of addressing the means for performing the spatial amplitude modulation and/or the spatial filter, and transmitting said one or more control signals.

4. A method according to claim 1, the method being characterized in that the generated phase-modulated wave front $o(x',y')$ has an at least substantially constant amplitude in a plane transverse to a direction of propagation of the phase-modulated wave front.

5. A method according to claim 1, wherein the spatial phase distribution of the input wave front $E(x,y)$ is at least substantially constant over the wave front.

6. A method according to claim 1, wherein the input radiation is at least substantially spatially and temporally coherent.

7. A method according to claim 1, wherein the step of performing the spatial amplitude modulation further comprises the step of defining a transverse spatial profile of the amplitude modulated wave front $a(x,y)$.

8. A method according to claim 1, wherein the spatial amplitude modulation is performed by an optical element providing a substantially continuous variation of absorption and/or reflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

9. A method according to claim 1, wherein the spatial amplitude modulation is performed by an optical element comprising a matrix of absorbing and/or reflecting elements.

10. A method according to claim 9, wherein the absorbing and/or reflecting elements are individually addressable so as to individually control the absorption and/or reflection of each element.

11. A method according to claim 1, wherein the Fourier or Fresnel transformation and/or the inverse Fourier or Fresnel transformation is performed by a lens or a diffracting pattern.

12. A method according to claim 1, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

13. A method according to claim 12, further comprising the step of individually controlling one or more phase shifting and/or damping elements in order to individually control the phase shift and/or damping of one or more components of the Fourier or Fresnel distribution.

14. A method according to claim 1, wherein the spatial amplitude modulation $\alpha(x,y)$ has three or more different values, the method further comprising the step of, after the inverse Fourier transformation or the inverse Fresnel transformation, performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front $o(x',y')$ to generate an at least substantially constant amplitude distribution.

15. A method for generating a phase-modulated wave front of electromagnetic radiation comprising the steps of:

providing an input wave front of electromagnetic radiation, $E(x,y)$,

performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front to generate a spatial amplitude distribution $a(x,y)$ in the electromagnetic radiation in a plane transverse to a direction of propagation of the electromagnetic radiation,

Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution of the amplitude-modulated wave front $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

filtering the Fourier or Fresnel distribution by phase shifting at least part of a zero-order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution and/or damping a zero-order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution by a spatial filter having a filter function $H(f_x,f_y)$ giving the phase shift and/or damping of the zero-order component in relation to higher-order components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation whereby a phase-modulated wave front $o(x',y')$ is formed, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

16. A method according to claim 15, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, in order to generate a predetermined phase-modulation.

17. A method according to claim 16, further comprising the step of providing means for performing the spatial amplitude modulation $\alpha(x,y)$ and/or the spatial filter which are addressable and adapted to receive one or more control signals controlling the spatial amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the method further comprising the step of addressing the means for performing the spatial amplitude modulation and/or the spatial filter, and transmitting said one or more control signals.

18. A method according to claim 15, the method being characterized in that the generated phase-modulated wave front $o(x',y')$ has an at least substantially constant amplitude in a plane transverse to a direction of propagation of the phase-modulated wave front.

19. A method according to claim 15, wherein the spatial phase distribution of the input wave front $E(x,y)$ is at least substantially constant over the wave front.

20. A method according to claim 15, wherein the input radiation is at least substantially spatially and temporally coherent.

21. A method according to claim 15, wherein the step of performing the spatial amplitude modulation further comprises the step of defining a transverse spatial profile of the amplitude modulated wave front $a(x,y)$.

22. A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ is performed by an optical element providing a substantially continuous variation of absorption and/or reflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

23. A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ is performed by an optical element comprising a matrix of absorbing and/or reflecting elements.

24. A method according to claim 23, wherein the absorbing and/or reflecting elements are individually addressable so as to individually control the absorption and/or reflection of each element.

25. A method according to claim 15, wherein the Fourier or Fresnel transformation and/or the inverse Fourier or Fresnel transformation is performed by a lens or a diffracting pattern.

26. A method according to claim 15, wherein the spatial filter is a phase contrast filter.

27. A method according to claim 15, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

28. A method according to claim 27, further comprising the step of individually controlling one or more phase shifting and/or damping elements in order to individually control the phase shift and/or damping of the zero-order component of the Fourier or Fresnel distribution in relation to higher-order components of the Fourier or Fresnel distribution.

29. A method according to claim 15, wherein the amplitude modulation $\alpha(x,y)$ has a minimum value $\mathrm{Min}(\alpha(x,y))$, a maximum value $\mathrm{Max}(\alpha(x,y))$ and an average value $\overline{\alpha}$, and wherein the spatial filter has a central part for performing the filtering of the zero order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ and a surrounding part for performing the filtering of the higher order components, the surrounding part having a transmittivity or reflectivity $A\in]0;1]$ and the central part having a transmittivity or reflectivity $B\in[0;1]$, and the relative phase shift of radiation filtered by the central part and the surrounding part being θ, where A, B, and θ are variables of the filter function $H(f_x,f_y)$ and forms a combined filter term C expressed as

$$C=\frac{B}{A}e^{i\theta}-1=|C|e^{i\psi_C}.$$

30. A method according to claim 29, wherein $H(f_x,f_y)$ is adjusted to have A = B = 1 and $\theta = \pi$, and wherein the spatial amplitude modulation $\alpha(x,y)$ is performed according to

$$\alpha(x,y)=b(x,y)+\overline{b}\left[\tfrac{1}{2}-\overline{g}\right]^{-1}g(r),$$

where b(x,y) is a binary function with an average value $\bar{b}$, g(r) is a function which counterbalance effects represented by a synthetic reference wave g(r') of the system, and $\bar{g}$ is the average value of g(r).

31. A method according to claim 29, wherein the spatial amplitude modulation $\alpha(x,y)$ is an at least substantially binary function whereby the phase-modulated wave front a(x,y) is generated with a binary phase-modulation.

32. A method according to claim 31, further comprising the step of adjusting the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, according to the following steps

determining a spatial relation η being a ratio between a size of the central part of the spatial filter and a size of the zero order component of the Fourier or Fresnel transformed amplitude-modulated wave front $\bar{a}(f_x,f_y)$ at the position of the spatial filter,

determining a parameter $K(\eta)$ expressing a relative amplitude of radiation within the central part of the spatial filter,

where expressions for η and $K(\eta)$ are specific for a specific spatial profile of the amplitude modulated wave front a(x,y), and

adjusting the parameters η, C, $Min(\alpha(x,y))$, $Max(\alpha(x,y))$ and $\bar{\alpha}$ to at least substantially fulfill

$$K\bar{\alpha}|C||\cos(\psi_c)| = \tfrac{1}{2}\left(Max(\alpha(x,y)) + Min(\alpha(x,y))\right),$$

in order to generate a predetermined phase-modulation.

33. A method according to claim 32, wherein η is determined according to

$$\eta = \gamma \frac{\Delta s \cdot \Delta s_f}{\lambda \cdot F},$$

where Δs is a size of the amplitude-modulated wave front a(x,y), Δs_f is a size of the central part of the spatial filter, γ is a geometrical parameter specific to a spatial profile of the amplitude modulated wave front a(x,y), λ is the wavelength of the radiation, and F is the Focal length of the Fourier or Fresnel transformation.

34. A method according to claim 15, wherein the amplitude modulated wave front a(x,y) and the central part of the spatial filter at least substantially have a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, ellipsoidal.

35. A method according to claim 31, wherein the amplitude modulated wave front a(x,y) and the central part of the spatial filter have an at least substantially circular spatial profile, the steps of determining the parameters η and $K(\eta)$ comprising determining η and $K(\eta)$ according to

$$\eta = \frac{1}{0.61}\frac{\Delta r \cdot \Delta r_f}{\lambda \cdot F},$$

where Δr is the radius of the amplitude-modulated wave front a(x,y) and Δr_f is the radius of the central part of the spatial filter, and

$$K = 1 - J_0(1.22\pi\eta),$$

where J_0 is the zero'th order Bessel function.

36. A method according to claim 15, wherein the spatial amplitude modulation $\alpha(x,y)$ has three or more different values, the method further comprising the step of, after the inverse Fourier transformation or the inverse Fresnel transformation, performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front o(x',y') to generate an at least substantially constant amplitude distribution.

37. A system for generating a phase-modulated wave front of electromagnetic radiation, said system comprising

a first deflecting and/or absorbing device for receiving an input wave front E(x,y) of electromagnetic radiation, performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front by deflecting and/or absorbing parts of the wave front to generate a spatial amplitude distribution a(x,y) in a plane transverse to a direction of propagation of the wave front, and emitting the amplitude modulated wave front a(x,y),

means for Fourier or Fresnel transforming the amplitude-modulated wave front a(x,y) to form a Fourier or Fresnel distribution $\bar{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

a spatial filter for receiving the Fourier or Fresnel distribution $\bar{a}(f_x,f_y)$, phase shifting one or more first components in relation to one or more second components of the Fourier or Fresnel distribution and/or damping one or more third components in relation to one or more fourth components of the Fourier or Fresnel distribution, and emitting a filtered distribution $\bar{a}'(f_x,f_y)$, said spatial filter being characterized by a filter function $H(f_x,f_y)$ which gives the damping and/or phase shift for each component of the Fourier or Fresnel distribution $\bar{a}(f_x,f_y)$,

means for inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation to form a phase-modulated wave front $o(x',y')$, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

38. A system according to claim 37, further comprising a controller for controlling the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, so as to generate a predetermined phase-modulated wave front $o(x',y')$.

39. A system according to claim 38, wherein the controller comprises interface means for addressing the first deflecting and/or absorbing device and/or the spatial filter and for transmitting signals controlling the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$.

40. A system according to claim 39, wherein the controller further comprises holding means for holding information related to the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the controller being adapted to generate the control signals transmitted by the interface means on the basis of the information comprised in the holding means.

41. A system according to claim 38, wherein the controller comprises electronic processing means for calculating the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, or parameters thereof.

42. A system according to claim 39, wherein the first deflecting and/or absorbing device comprises a matrix of deflecting and/or absorbing elements, and wherein said elements can be individually addressed by the interface means in order to control the deflection and/or absorption of each element individually.

43. A system according to claim 37, wherein the first deflecting and/or absorbing device provides a substantially continuous variation of absorption and/or deflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

44. A system according to claim 37, wherein the first deflecting and/or absorbing device further comprises an aperture for defining a transverse spatial profile for the amplitude modulated wave front a(x,y).

45. A system according to claim 38, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a transverse spatial profile for the amplitude modulated wave front a(x,y).

46. A system according to claim 37, wherein the means for Fourier or Fresnel transformation and/or the means for inverse Fourier or Fresnel transformation is selected from the group consisting of achromatic lenses, Fourier lenses, doublets planar lenses, diffracting patterns, free space propagation

47. A system according to claim 37, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

48. A system according to claims 38, wherein the controller is adapted to individually control one or more phase shifting and/or damping elements for individually controlling the phase shift and/or damping of one or more components of the Fourier or Fresnel distribution.

49. A system according to claim 37, further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front o(x',y') and performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front o(x',y') by deflecting and/or absorbing parts of said wave front in order to generate a wave front having an at least substantially constant amplitude distribution.

50. A system for generating a phase-modulated wave front of electromagnetic radiation, said system comprising

a first deflecting and/or absorbing device for receiving an input wave front $E(x,y)$ of electromagnetic radiation, performing a spatial amplitude modulation $\alpha(x,y)$ on the input wave front by deflecting and/or absorbing parts of the wave front to generate a spatial amplitude distribution $a(x,y)$ in a plane transverse to a direction of propagation of the wave front, and emitting the amplitude modulated wave front $a(x,y)$,

means for Fourier or Fresnel transforming the amplitude-modulated wave front $a(x,y)$ to form a Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, said Fourier or Fresnel distribution comprising Fourier or Fresnel components,

a spatial filter for receiving the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, phase shifting a zero-order component of the Fourier or Fresnel distribution in relation to other components of the Fourier or Fresnel distribution and/or damping a zero-order component of the Fourier or Fresnel distribution in relation to other components of the Fourier or Fresnel distribution, and emitting a filtered distribution $\tilde{a}'(f_x,f_y)$, said spatial filter being characterized by a filter function $H(f_x,f_y)$ which gives the damping and/or phase shift of the zero-order component in relation to other components of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$, and

means for inverse Fourier or inverse Fresnel transforming the filtered electromagnetic radiation to form a phase-modulated wave front $o(x',y')$, said phase-modulated wave front being a function of at least the input wave front $E(x,y)$, the amplitude modulation $\alpha(x,y)$, and the filter function $H(f_x,f_y)$.

51. A system according to claim 50, further comprising a controller for controlling the spatial amplitude modulation $\alpha(x,y)$ in relation to the filter function $H(f_x,f_y)$, or vice versa, so as to generate a predetermined phase-modulated wave front $o(x',y')$.

52. A system according to claim 51, wherein the controller comprises interface means for addressing the first deflecting and/or absorbing device and/or the spatial filter and for transmitting signals controlling the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$.

53. A system according to claim 52, wherein the controller further comprises holding means for holding information related to the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, the controller being adapted to generate the control signals transmitted by the interface means on the basis of the information comprised in the holding means.

54. A system according to claim 51, wherein the controller comprises electronic processing means for calculating the amplitude modulation $\alpha(x,y)$ and/or the filter function $H(f_x,f_y)$, or parameters thereof.

55. A system according to claim 52, wherein the first deflecting and/or absorbing device comprises a matrix of deflecting and/or absorbing elements, and wherein said elements can be individually addressed by the interface means in order to control the deflection and/or absorption of each element individually.

56. A system according to claim 55, wherein the first deflecting and/or absorbing device has a resolution equal to or higher than 100 elements/cm^2.

57. A system according to claim 55, wherein the first deflecting and/or absorbing device comprises at least 100 deflecting and/or absorbing elements.

58. A system according to claim 50, wherein the first deflecting and/or absorbing device provides a substantially continuous variation of absorption and/or deflection in a plane transverse to a direction of propagation of the electromagnetic radiation.

59. A system according to claim 58, wherein the first deflecting and/or absorbing device is a silver halide film.

60. A system according to claim 50, wherein the first deflecting and/or absorbing device further comprises an aperture for defining a transverse spatial profile for the amplitude modulated wave front $a(x,y)$.

61. A system according to claim 60, wherein the aperture defines a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, circular, ellipsoidal for the amplitude modulated wave front $a(x,y)$.

62. A system according to claim 51, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a transverse spatial profile for the amplitude modulated wave front a(x,y).

63. A system according to claim 62, wherein the controller is adapted to control the spatial amplitude modulation $\alpha(x,y)$ to define a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, circular, ellipsoidal for the amplitude modulated wave front a(x,y).

64. A system according to claim 50, wherein the means for Fourier or Fresnel transformation and/or the means for inverse Fourier or Fresnel transformation is selected from the group consisting of achromatic lenses, Fourier lenses, doublets planar lenses, diffracting patterns, free space propagation

65. A system according to claim 50, wherein the spatial filter is a phase contrast filter.

66. A system according to claim 50, wherein the spatial filter comprises one or more individually addressable and controllable phase shifting and/or damping elements.

67. A system according to claims 51, wherein the controller is adapted to individually control one or more phase shifting and/or damping elements for individually controlling the phase shift and/or damping of the zero-order component of the Fourier or Fresnel distribution $\bar{a}(f_x,f_y)$ in relation to other components of the Fourier or Fresnel distribution.

68. A system according to claim 50, further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front o(x',y') and performing a spatial amplitude modulation $\alpha_2(x',y')$ on the phase modulated wave front o(x',y') by deflecting and/or absorbing parts of said wave front in order to generate a wave front having an at least substantially constant amplitude distribution.

69. A system according to claim 50, wherein the first deflecting and/or absorbing device is a reflective device comprising one or more reflecting surfaces adapted to receive the input wave front E(x,y) of electromagnetic radiation, reflect at least part of the received radiation and emit the reflected radiation as the amplitude modulated wave front $\alpha(x,y)$.

70. A system according to claim 50, wherein the first deflecting and/or absorbing device is a transmitting device being adapted to receive the input wave front of electromagnetic radiation, transmit at least part of the received radiation and emit the transmitted radiation as the amplitude modulated wave front.

71. A system according to claim 50, wherein the spatial filter is a transmitting device being adapted to receive the Fourier or Fresnel distribution, transmit at least part of one or more Fourier or Fresnel components or transmit at least part of one or more Fourier or Fresnel components and phase shift one or more of the first components in relation to one or more of the second components of the Fourier or Fresnel distribution, and emit the transmitted radiation as the filtered distribution.

72. A system according to claim 50, wherein the spatial filter is a reflective device comprising one or more reflecting surfaces adapted to receive the Fourier or Fresnel distribution, reflect at least part of one or more Fourier or Fresnel components or reflect at least part of one or more Fourier or Fresnel components and phase shift one or more of the first components in relation to one or more of the second components of the Fourier or Fresnel distribution, and emit the reflected radiation as the filtered distribution.

73. A system according to claim 50, wherein the spatial filter has a central part for performing the filtering of the zero order component of the Fourier or Fresnel distribution $\tilde{a}(f_x,f_y)$ and a surrounding part for performing the filtering of the higher order components, the surrounding part having a transmittivity or reflectivity $A\in]0;1]$ and the central part having a transmittivity or reflectivity $B\in[0;1]$, and the relative phase shift of radiation filtered by the central part and the surrounding part being θ, where A, B, and θ are variables of the filter function $H(f_x,f_y)$ and forms a combined filter term C expressed as

$$C = \frac{B}{A}e^{i\theta} - 1 = |C|e^{i\psi_C}\text{, and}$$

wherein a minimum value $Min(\alpha(x,y))$, a maximum value $Max(\alpha(x,y))$, and an average value $\overline{\alpha}$ can be assigned to the amplitude modulation $\alpha(x,y)$ performed by the first deflecting and/or absorbing device.

74. A system according to claim 73, wherein $H(f_x,f_y)$ is adjusted to have $A = B = 1$ and $\theta = \pi$, and wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation $\alpha(x,y)$ according to

$$\alpha(x,y) = b(x,y) + \bar{b}\left[\tfrac{1}{2} - \bar{g}\right]^{-1} g(r),$$

where b(x,y) is a binary function with an average value $\bar{b}$, g(r) is a function which counterbalance effects represented by a synthetic reference wave g(r') of the system, and $\bar{g}$ is the average value of g(r).

75. A system according to claim 73, wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation $\alpha(x,y)$ according to an at least substantially binary function whereby the phase-modulated wave front a(x,y) is generated with a binary phase-modulation.

76. A system according to claim 75, wherein the first deflecting and/or absorbing device and the spatial filter are adapted to perform the spatial amplitude modulation $\alpha(x,y)$ and the filtering $H(f_x,f_y)$ according to

$$K\bar{\alpha}|C||\cos(\psi_C)| = \tfrac{1}{2}\left(Max(\alpha(x,y)) + Min(\alpha(x,y))\right),$$

wherein η is a spatial relation being a ratio between a size of the central part of the spatial filter and a size of the zero order component of the Fourier or Fresnel transformed amplitude-modulated wave front $\tilde{a}(f_x,f_y)$ at the position of the spatial filter,

$K(\eta)$ is a parameter expressing a relative amplitude of radiation within the central part of the spatial filter, and

where expressions for η and $K(\eta)$ are specific for a specific spatial profile of the amplitude modulated wave front a(x,y).

77. A system according to claim 76, wherein η is determined according to

$$\eta = \gamma \frac{\Delta s \cdot \Delta s_f}{\lambda \cdot F},$$

where Δs is a size of the amplitude-modulated wave front a(x,y), Δs_f is a size of the central part of the spatial filter, γ is a geometrical parameter specific to a spatial profile of the amplitude modulated wave front a(x,y), λ is the wavelength of the radiation, and F is the focal length of the Fourier or Fresnel transforming means.

78. A system according to claim 60, wherein the spatial profile of the amplitude modulated wave front a(x,y) and the central part of the spatial filter is defined to have a spatial profile selected from the group consisting of triangular, rectangular, quadratic, rhombic, pentagonal, hexagonal, ellipsoidal.

79. A system according to claim 60, wherein the spatial profile of the amplitude modulated wave front a(x,y) and the central part of the spatial filter is defined to have an at least substantially circular, and wherein the parameters η and $K(\eta)$ are determined according to

$$\eta = \frac{1}{0.61}\frac{\Delta r \cdot \Delta r_f}{\lambda \cdot F},$$

where Δr is the radius of the amplitude-modulated wave front a(x,y) and Δr_f is the radius of the central part of the spatial filter, and

$$K = 1 - J_0(1.22\pi\eta),$$

where J_0 is the zero'th order Bessel function.

80. A system according to claim 50, wherein the first deflecting and/or absorbing device is adapted to perform the spatial amplitude modulation $\alpha(x,y)$ according to a function having three or more different values, the system further comprising a second deflecting and/or absorbing device for receiving the phase modulated wave front o(x',y') and performing a spatial amplitude modulation $\alpha_2(x',y')$ to generate an at least substantially constant amplitude distribution.